Sum and Difference of Functions

If f and g are functions,
the sum function $(f+g)(x)$ is defined by: _____

the difference function $(f-g)(x)$ is defined by: _____

The domain of $f+g$ and $f-g$ is the set of all real numbers that are in the domain of **both** f and g.

1. Given $f(x)=\sqrt{x+2}$ and $g(x)=\sqrt{9-x^2}$.
   a) State the domain of f.
   b) State the domain of g.

   c) Find $(f+g)(x)$ and state the domain.
   d) Find $(f-g)(x)$ and state the domain.

   e) Evaluate $(f+g)(1)$. State the exact answer, then state the answer accurate to two decimal places.

2. Given $f(x)=\log_4(x+1)$ and $g(x)=\log_4\left(x^2-9\right)$.

a) State the domain of f.

b) State the domain of g.

c) Find $(g-f)(x)$ and state the domain.

d) Find $(f+g)(x)$ and state the domain.

3. Given $f(x) = -2(3)^{x-1}$ and $g(x) = 4(3)^{-2x+3}$.

a) State the domain of f.

b) State the domain of g.

c) Find $(f-g)(x)$ and state the domain.

4. Given $f(x) = \sec\left(x + \frac{\pi}{6}\right)$ and $g(x) = \cot\left(x + \frac{\pi}{6}\right)$.

a) State the domain of f.

b) State the domain of g.

c) Find $(f-g)(x)$ and state the domain.